Upcoming Project Issues

- **Ongoing PHENIX Removal and Repurposing in preparation for sPHENIX**
- **BNL-charged Tracker review – September 7-8**
- **DOE S&T review of RHIC including sPHENIX – August 23-25**
- **TPC electronics mini-review -August**
  - **Important to have a viable block diagram of the readout with bandwidth details.**
- **Order full-size OHCal mechanical prototype – August if funding is available**
- **Prepare for next sPHENIX Cost and Schedule review – Late Fall CY2016**
- **FNAL Test beam – Jan 2017**
- **Full field SC-magnet test – Early 2017**

Upcoming sPHENIX Project Schedule

• EMCal Workfest at BNL	Aug 11-12
• TPC electronics review	TBD
• Annual DOE Science and Technology review	Aug 23-25
• Tracker review practice	Aug 30
• BNL-charged Tracker Review	Sept 7-8
• HCal Workfest at ISU	Oct 22-23
• sPHENIX Cost and Schedule Review	Nov or Dec 2016

Tracker Review Preparation

- **sPHENIX MAPs mini-review** **Jun 30**
  - **Reviewers: Eric Mannel, Flemming Videbaek, John Lajoie + sPM**
  - **Very constructive. 61 homework tasks**

- **TPC detector mini-review** **Jul 13**
  - **Reviewers: Eric Mannel, Jim Thomas, Craig Woody, sPM**
  - **Also very constructive. 69 homework tasks**
  - **Excerpt "** *The sPHENIX TPC design is technically sound and well thought out. A very capable group of scientists and engineers are working on the project and doing pre-conceptual design and engineering for the device.* **"**

- **TPC electronics workfest – BNL** **Aug 3 & 4**
  - **Establish the basic parameters of the readout chain**
  - **Block diagram of readout chain**

- **TPC electronics mini-review** **TBD**

- **Tracker review practice** **Aug 30 (all day)**

- **BNL-charged Tracker Review** **Sept 7-8**

Charge for the MAPs mini-review

The charge for the review committee is to assess the state of project planning for the sPHENIX MAPs detector. We request a presentation, or presentations that allow us to evaluate the basis for the cost estimate, the basis for the schedule, the state of the WBS, the available resources to carry out the project and the proposed subsystem org chart. The presentations should cover the project plan for the MAPs detector and the associated electronics.

We want to give the MAPs team a list of action items/homework assignments to better prepare them for the September Tracker review.

Make notes on action items and homework assignments during the review.

We'll meet for a short time at the end of the presentations to discuss potential homework/action items. Send me your list via e-mail today. I'll edit a draft report, distribute it to you for checking and revision, after revising I'll forward it to the MAPs team.

Charge for the TPCs mini-review

The charge for the review committee is to assess the state of project planning for the sPHENIX TPC. We request a presentation, or presentations that allow us to evaluate the basis for the cost estimate, the basis for the schedule, the state of the WBS, the available resources to carry out the project and the proposed subsystem org chart. The presentations should cover the project plan for the TPC detector. The electronics will be reviewed at a separate meeting.

We want to give the TPC team a list of action items/homework assignments to better prepare them for the September Tracker review.

Make notes on action items and homework assignments during the review.

We'll meet for a short time at the end of the presentations to discuss potential homework/action items. Send me your list via e-mail today. I'll edit a draft report, distribute it to you for checking and revision, after revising I'll forward it to the TPC team.

Tracker Review Charge - revised

The review will include an examination of the following specific items:

1. **Technical Design**: Have the physics requirements driving the design specifications of the sPHENIX tracking detector been properly addressed in the detector design and planning? Are the tracking scope and specifications sufficiently well defined to support the preliminary cost and schedule estimates? Has a viable process and schedule for any anticipated significant technology down-selects been put forward? If so, does it realistically conform to the project's schedule constraints?

2. **Cost and Funding**: Are the cost estimates for each of the sub-detectors reasonable? Have the various funding sources and institutional resources been identified in each of the cases, and have any necessary assumptions been properly incorporated into the planning and presented? Do the estimates in the initial resource loaded schedules contain all of the staffing and other resources needed in order to execute the subprojects?

3**. Schedule:** Are the schedules realistic and achievable? If not, how can this be remedied or addressed? Does the project schedule for each of the sub-detectors properly take into consideration all necessary activities associated with detector realization – i.e., design, R&D, prototyping, beam tests and analysis requirements, feedback to the design, and final design and construction?

4**. Management:** Is there a viable plan for the roles and responsibilities of the institutions involved in the different subprojects? Has the staffing at these institutions been identified? Do the proposed institutions/detector collaborations have the expertise and sufficient available research time to execute the projects on the envisioned time scales? Can viable subproject collaborations be assembled in the time available?

5. **Risk:** Have the principal risks been identified and associated mitigation plans been developed? If not, where are the most notable deficiencies and vulnerabilities? Are there modifications to the design and/or R&D campaigns that might significantly reduce the principal risks?

6**. Open Issues:** Are there any unidentified open design or fabrication issues that require additional attention?

Tracker Review Preparation

- Revised charge for Tracker review from Jon Kotcher
  - It will be a technical, cost and schedule assessment of TPC and MAPs.
  - Intermediate Si Strip Tracker will be evaluated – funded by Japanese institutions
- Prep for Tracker review
  - TPC and MAPs need **WBS dictionary**, **BOE documents**, **bottoms-up contingency estimate** and **risk registry**.
  - We have provided the TPC and MAPs team provide guidance on preparing these documents
- Need to confirm review speakers
- Review committee is not yet finalized
- The plan presented at the review will be:
  - MAPs-vertex identical to Inner ALICE ITS (r = 2.3cm, 3.1 cm, 3.9 cm)
  - TPC Tracker (20 cm < r < 78 cm)
  - Intermediate Si strip tracker 3-4 layers (**If simulations demonstrate benefit**), paid for by RIKEN (5 cm < r < 12 cm)
    - **Yasuyuki Akiba has agreed to provide memo signed by RIKEN Management describing scope to be provided by RIKEN to sPHENIX in advance of the Sept Tracker review.**

Tentative Review Agenda

Associate Laboratory Director's Design Review
of the sPHENIX Tracker
September 7-8, 2016
Brookhaven National Laboratory
Draft Agenda v2

Wednesday, September 7 -- Physics Bldg., Room XXX *

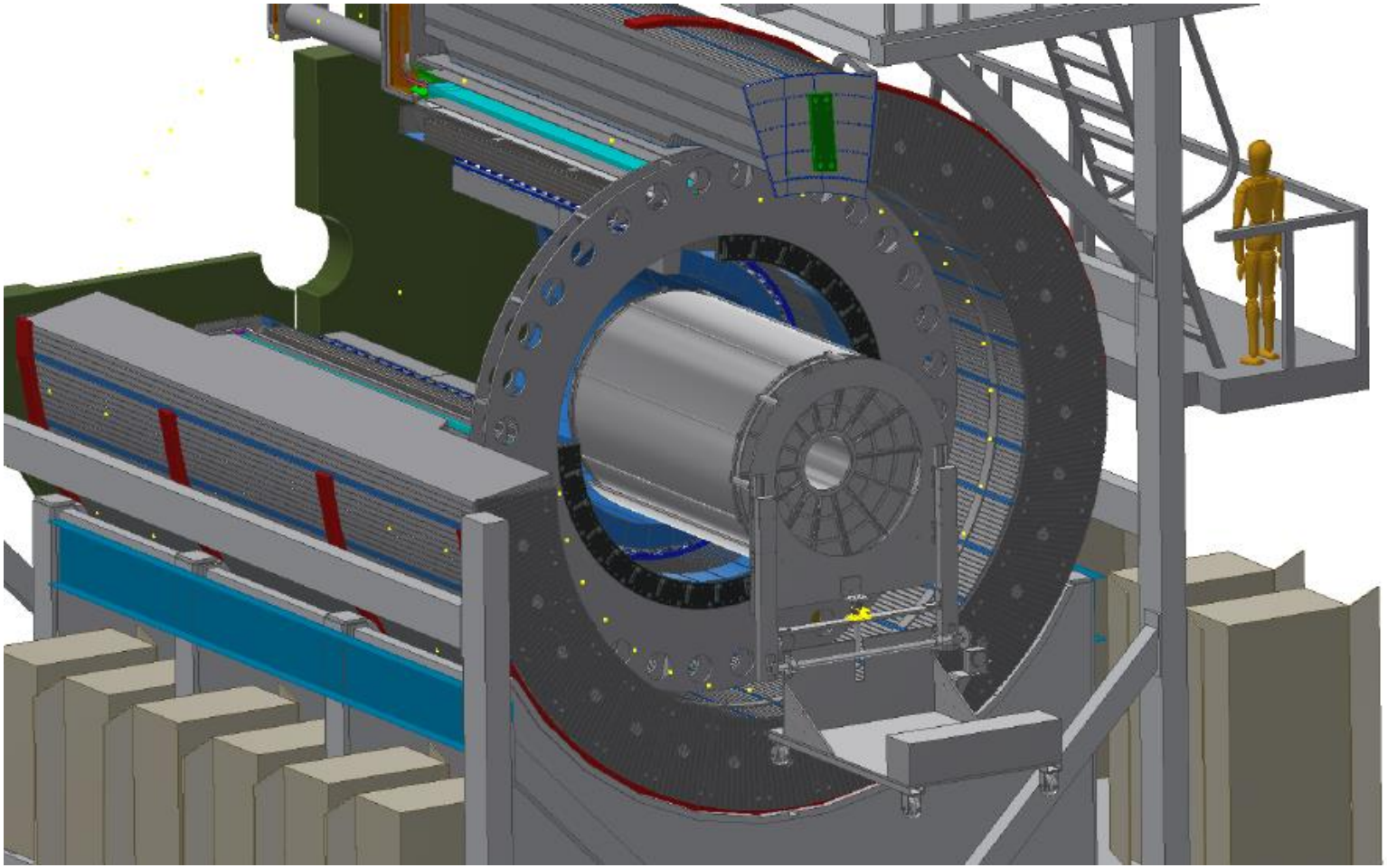
8:00 am	Executive Session.....Kotcher
8:30 am	sPHENIX Project Overview.....O'Brien
9:00 am	Tracker Overview/Performance Parameters..... TBD
9:25 am	Tracker Simulation.....TBD
9:50 am	Break
10:05 am	Time Projection Chamber Technical Overview.....TBD
10:30 am	TPC Cost/Schedule/Management.....TBD
10:55 am	Monolithic Active Pixel Sensor Detector Technical Overview..... TBD
11:20 am	MAPS Cost/Schedule/Resources.....TBD
11:45 pm	Intermediate Tracker Technical Overview..... TBD
12:05 pm	INTT Cost/Schedule/Resources.....TBD
12:25 pm	Lunch
1:45 pm	Subcommittee Breakout Sessions • TPC – Physics Bldg., Room • MAPS – Physics Bldg., Room • INTT – Physics Bldg., Room
4:30 pm	Executive Session.....Kotcher
6:00 pm	Adjourn
6:30 pm	Dinner

Thursday, September 8 -- Physics Bldg., Room XXX

8:00 am	Responses to Questions
9:00 am	Breakout Sessions
10:30 am	Executive Session/Committee Report Writing
1:00 pm	Closeout Dry Run.....Kotcher
2:00 pm	Closeout Presentation
2:30 pm	Adjourn

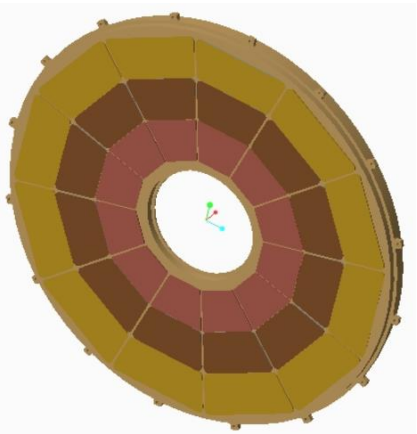
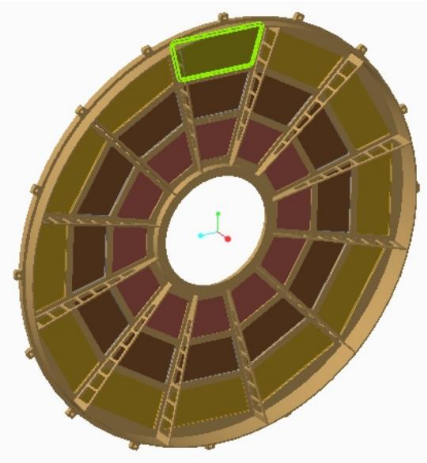
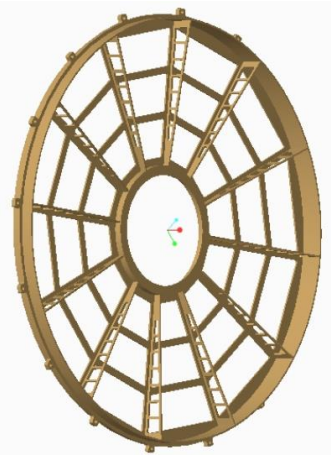
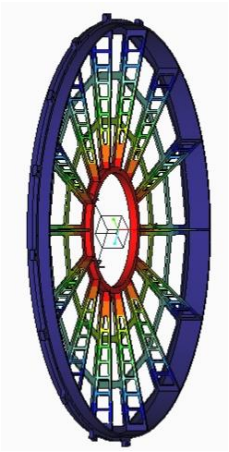
* Plenary presentation durations include questions.

Progress on TPC Mechanics

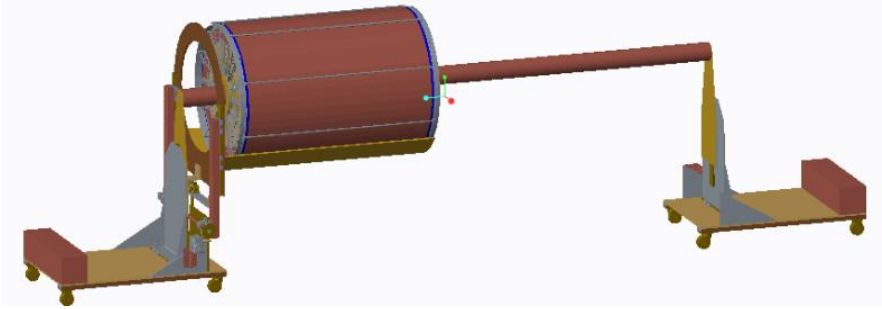


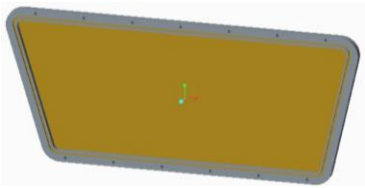
Progress on TPC Mechanics

3D models of the TPC endcap

TPC Installation Device



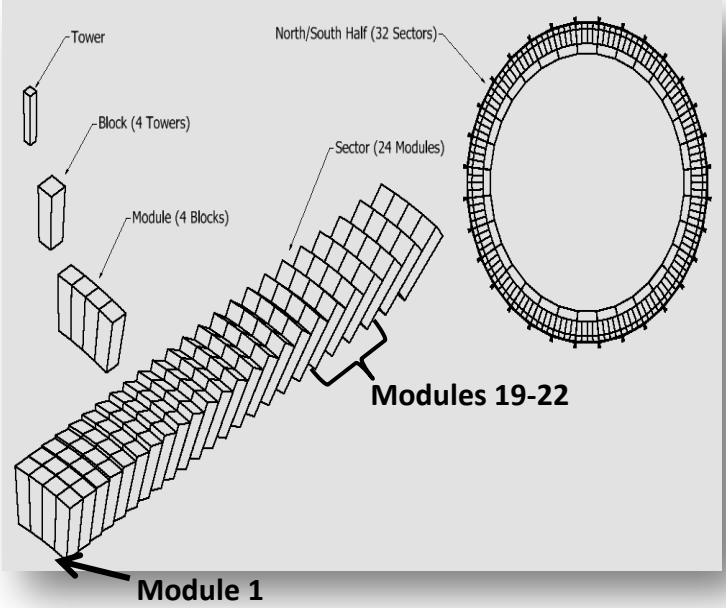


Module Support
(Quad GEM or 2 GEMs+Micromega)

EMCal Test Plans

The next round of prototyping will include:

- **Construction of 2x2 tower blocks tapered for high eta**
- **FNAL test beam of high eta performance of the EMCal**
- **Investigation of tower mass-production techniques**
- **Production of blocks 19-22**
  - **Design screen, molds, production fixtures.**
- **Confer with UIUC to decide on best practice/process.**
- **Economies for molds/screens/parts**



Tower Fab Process Steps:

- **Prepare molds – clean, coat, assemble**
- **Fill fiber assembly – fill stack of screens with fibers**
- **Place fiber assembly into mold**
- **Fill with W-powder – vibrate/compress**
- **Infuse epoxy – flow/vacuum**
- **Extract part**
- **Machining prep end surfaces, tapping mounting hole/insert stud**
- **Assembly of blocks into modules?**
  - **Machine end surfaces**
- **Attaching end reflector**
- **Attaching light guides + preamp pcb**